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FUNGI ON MOSSES

ELIZABETH G. BRITTON

Cladosporium epibryum Cooke & Massee was referred to in the Bryologist for May 1911 and originally described without indication of hosts. As they were all sent to Dr. Massee, I wrote to inquire about them and received the following list of mosses as host species:

1. *Ulota phyllantha* Brid.—Jaquina Bay, Ore.—T. Howell.
2. *Grimmia ovata* W. & M.—Canada.—J. Macoun, No. 84.
3. *Grimmia Doniana* Sm.—Spokane Falls, Wash.—J. B. Leiberg, No. 110.

Encalypta rhabdocarpa Schwgr. —Lake Pend d'Oreille, Ida.—J. B. Leiberg, 153 pp.

5. *Bartramia pomiformis* Hedw.—Lake Pend d'Oreille.— J. B. Leiberg, 153 pp.
6. *Hypnum megaptilum* Sull.—Lake Pend d'Oreille. — J. B. Leiberg.
7. *Fabronia andina* Mitt.—Ingenio del Oro, Bolivia.—H. H. Rusby.
8. *Bartramia Potosica* Mont.—Sorata, Bolivia.—H. H. Rusby.

These types are at Kew and duplicates of them exist at the New York Botanical Gardens. The fungus occurs as black septate filaments protruding from the walls of old capsules, particularly those that have wintered over, usually species of genera that hold their capsules a long time. In the case of *Ulota phyllantha*, they occurred around the mouth of the capsule, and the teeth were so much distorted and undeveloped that it was difficult to describe the peristome, on these, the first record for this moss to be found fruiting.

NOTES ON SOME OF THE PRINCIPAL MOSSES OF THE COAST REGION OF BRITISH COLUMBIA.

[Read at Sullivant Moss Society Meeting, Minneapolis, Dec. 28, 1910]

ALBERT J. HILL

Though for some years cultivating and greatly enjoying an amateur acquaintance with the moss flora of this Pacific Slope, I have always felt great hesitation in committing my scant knowledge to writing, conscious that I possess no critical acquaintance with the subject.

What little has been learned of the several genera and species that carpet our great evergreen forests and festoon their giant boles for a hundred feet skyward, has come of actual contact with Nature only, except as assisted by friends of the Sullivant Moss Society to whom I am under lastlng obligations for frequent and valued favors.

The climate of British Columbia, at least of that portion of it occupying the Western flanks of the Cascade Range of mountains and including the Islands of the Gulf of Georgia. is of a peculiarly mild and humid character and especially adapted to the production of a profuse cryptogamic flora which everywhere abounds, from the tiny mosses that clothe every damp clay bank in velvet of richest browns and greens and that require a strong magnifier to resolve them into beautiful perfect fruited plants, up through cryptogams of larger growth, lichens, hepatics and ferns to the great bracken, *Pteris aquilina,* that in favorable situations reaches a height of fifteen feet with a rachis like a giant's staff. Such is our forest undergrowth, of perennial green, "A thing of beauty and a joy forever."

Profusion and paucity, however, seem to follow each other in cycles, the causes of which are not yet made out, and the prolific years of 1903-4 have been succeeded by a strange suppression of the moss-flora, so that in 1905 and subsequently very little could be done in collecting, but there are indications at last, of a return to fruitful seasons and what may be considered normal conditions, which may continue for years to come.

As to the relative abundance of the genera, perhaps first place should be accorded to the Mniums in their many varieties, with *M. insigne* leading, and covering large tracts with its dark green foliage and abundant fruit. Though taking kindly to either humus or rotten wood the former seems to be its natural habitat, and so dense, at times, is its growth and fruitage that one season fifty perfect plants might be taken at a single grasp. These were nearly all *insigne,* but strangely enough while the succeeding spring disclosed the same areas as densely populated with Mniums as before, *insigne* was noticeable only by its absence, and *venustum, glabrescens* and other lesser varieties monopolized the ground. This was sufficiently surprising and presents a problem yet to be solved. Was it a natural rotation or what?

M. Menziesi is somewhat arboreal in habit and affects the living trunks of *Acer macrophyllum,* but frequently adapts itself to rich and damp humus along brooksides; its likeness to *Climacium* in such situations is apt to cause it to be overlooked unless in fruit, when its identity is unmistakable.

The Hylocomiums undoubtedly rank next in profusion, and *H. splendens, loreum triquetrum* representing a large percentage of the entire moss flora of the Coast. The first is especially luxuriant and is without a peer and our finest bryophyte, but it is a rare and shy fruiter. In habitat it occupies indiscriminately the ground in shady forests or rotten logs and stumps, but never living trees or wet situations. *H. loreum* is found exclusively on decayed wood, is a profuse fruiter and with its abundant red capsules is a strikingly beautiful plant. *H. triquetrum* is also an abundant variety, covering large tracts of damp soil or wet rock with its pale green foliage, and climbing over prostrate timber and upturned roots of trees. It fruits rarely but occasionally produces abundant capsules.

Neckera Menziesii, N. Douglasii and *N. oligocarpa* are arboreal in habitat and confined almost exclusively to living trunks of *Acer macrophyllum* and *A. circinatum* and fruit abundantly.

Climacium dendroides is locally abundant, preferring low and moist lands subject to inundation. It fruits copiously late in the summer.

Hypnum subimponens, H. sequoiete, and *Crista-castrensis* are common, confined to fallen timber and moist situations, climbing on stumps and tree trunks and fruiting abundantly.

Alsia abietina occurs on Mayne Island, on large detached boulders along the Point Comfort Road, and also at Langley on the Fraser River on the bases of Cottonwood trees, in both localities fruiting well.

Pogonatum contortum is found in abundance along the shady ditches of the Blue Mountain Road in damp localities, also along the Pipeline road to Lake Coquitiam, fruiting copiously in summer and autumn.

Fontinalis Kindbergii R. & C. is not uncommon in standing water in shallow forest pools but has not been found in fruit. *F. Dalecarlica* also trailing from old posts at Langley subject to inundation but uniformly sterile.

Philonotis fontana is abundant in sluggish streams and ditches at New Westminster and at Sicamous and elsewhere, associated with *Camptothecium nitens* and in profuse fruit.

Polytrichum commune occupies waste and sterile soil and is too abundant everywhere.

Orthotricum cylindrocarpum is abundant locally on old trees in neglected orchards, and fruiting copiously.

Dicranum scoparium and *D. Bonjeani* are found in dense tufts on rotting logs and decaying trunks of standing timber, fruiting copiously.

Camptothecium lutescens occurs at Midway on the Province boundary and not infrequently farther North ; a beautiful and graceful plant and fruiting well.

Plagiothecium undulatum is a striking and handsome moss creeping over rotten logs, its only habitat, easily recognized by its long silvery fronds ; fruiting freely in fall and winter.

Rhyncostegium recurvans is common on rotting prostrate timber.

Antitrichia Californica is abundant on the trunks of living cottonwood trees encircling them in dense mats to far above easy reach. A beautiful moss and abounding in fruit in autumn.

Orthotrichum Lyellii occurs at Whonnock on the Fraser, fruits sparingly.

Brachythecium rivulare is not rare from the Forty-ninth parallel to Atlin and farther north, in quiet water and roadside ditches.

Racomitrium canescens is an abundant and interesting variety, clothing rocky ledges and gravelly stream beds with its curious hoariness ; quite indifferent to flood or drought, from either of which it emerges on the return of improved conditions bright and cheery as ever.

Isothecium myosuroides, trails from the branches of moribund evergreens, its long pendulous tresses often in full fruit in early Spring.

Eurhynchium Oreganum occurs on Pender Island, Gulf of Georgia and elsewhere, choosing rotting stumps as a habitat and fruiting well.

Funaria hygrometrica is a mysterious apparition, offspring of fire and not of water, springing up in crowded ranks wherever the soil has been thoroughly calcined by recent fire. A conflagration that has burned a forest to the roots and left no remnant but red ashes and desolation is sure to call up ten millions on ten millions of the tiny things so closely packed that no insect can penetrate the thicket. Always in some stage of dense fruit.

Dicranella Schreberi, rare, at Sicamous.

Dicranoweisia cirrhata in small dense tufts on scorched and decaying timber in densest fruit in early spring.

Aulacomnium androgynum, not rare on rotten wood and bearing its characteristic sporophytes and gemmae in abundance.

Sphagnums of numerous species and varieties occur wherever suitable conditions prevail but fruit from any of them is exceedingly rare, although patient search in high boots is sometimes rewarded with scant returns.

It is generally supposed that mosses avoid salt water, but at Miner's Bay, Gulf of Georgia, there occurs a beautiful variety of unknown name which thrives on the rocks lapped by the ocean water at high tide. It has not been noticed in fruit but appears to be a true terrestrial moss and a very beautiful one.

Isothecium Brewerianum is abundant on the bases of Douglas Firs on Mayne Island and elsewhere, fruiting freely in autumn.

Pogonatum capillare, on wet clay banks at Lake Coquitlan in fine fruit.

Dicranum fuscescens, on decaying conifers very common and always in some stage of fruit.

Claopodium crispifolium is abundant everywhere on rotting timber in damp and shady woods.

This list of British Columbia Mosses represents, without any attempt at scientific arrangement, a small part only of the contents of the writer's covers.

New Westminster, British Columbia.

REVIEW.—GENERA HEPATICARUM

Clé Synoptique avec Figures de tous les Genres connus d'Hepatiques.

L'Abbé Charles Lacouture, Professor of Natural History at the Collège Saint-Clement of Metz, finished the above work before his death. It was his wish to prepare a practical, non-technical key to